REMARKS

By this Amendment, claim 16 is amended. Claims 17-19 remain in the application. Thus, claims 16-19 are active in the application. Reexamination and reconsideration of the application are respectfully requested.

On page 2 of the Office Action, the specification was objected to for containing numerous references to claims which have been cancelled. The Applicant notes, however, that the references to the claims in the original specification were revised to describe "aspects" of the present invention in the substitute specification filed with the February 9, 2004 Amendment. Accordingly, the substitute specification does not contain any references to claims, whether they are pending or cancelled. Therefore, the Applicant respectfully requests the Examiner to withdraw the objection to the specification.

On page 3 of the Office Action, claims 16-19 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner indicated that one skilled in the art would not be able to make and/or use the invention of claim 16, because claim 16 includes the terms "when recording new data." The Examiner contends that the distinction between "new matter [data] and other forms of matter, such as presumably, existing matter, is not included in the specification."

Claim 16 has been amended to recite "constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording." The Applicant respectfully submits that one skilled in the art would clearly understand the meaning of the terms "when recording data which is not yet recorded on a disk" in view of the disclosure of the specification. For instance, Figure 2(a) shows the construction of a file structure when data is not yet recorded on a disk recording medium in which recordable clusters are connected in advance of starting data recording, Figure 2(b) shows the construction of the file structure of the disk recording medium when data recording begins, and Figure 2(c) shows the construction of the file structure of the disk recording medium when data recording ends. See, e.g., page 18, line 10 to page 23, line 3 of the substitute specification (page 17, line 4 to page 21, line 2 of the original specification).

Accordingly, the Applicant respectfully submits that one skilled in the art would clearly be able to make and/or use the invention of claim 16 in view of the disclosure of the specification. Therefore, the Applicant respectfully requests the Examiner to withdraw the rejection of claims 16-19 under 35 U.S.C. § 112, first paragraph.

In item 2 on page 4 of the Office Action, claims 16-17 and 19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ruff et al. (U.S. 5,675,769). This rejection is respectfully traversed for the following reasons.

The present invention provides a method for recording and reproducing digital data that is received from an externally-connected digital data input device. The digital data recording/reproduction method of the present invention prevents the destruction of a file and the loss of data when an abend such as a power failure occurs. The present invention is able to prevent the destruction of a file and the loss of data when an abend occurs by constructing a file structure, when recording data which is not yet recorded on a disk, i.e., the externally received data, on a disk recording medium in which recordable clusters are connected in advance of starting data recording. That is, the present invention connects a recordable area in advance of starting data recording for an indefinite required area when recording data which is not yet recorded on a disk.

Accordingly, by connecting the recordable clusters in advance of when recording of the digital data which is not yet recorded on a disk begins, when data recording is interrupted by an abend, such as a power failure, data which would have been recorded but for the abend remain as a part of the file, and therefore, the data file can be recorded or reproduced as if the abend never occurred.

Furthermore, according to the present invention, by connecting clusters in the recordable areas in advance of recording data which is not yet recorded on a disk, recording is performed as if it is performed on a tape medium comprising recordable areas of a continuous random accessible medium. Therefore, the present invention prevents the destruction of a file and the loss of data when an abend occurs even in the situation where the required area for recording is unknown prior to starting recording of the data which is not yet recorded on a disk.

The connection of the clusters of the recordable areas is not necessarily required to amount to the same size as the size which is required for recording the data which is

not yet recorded on a disk, but it is enough if the respective clusters should be larger than the necessary size, or all of the recordable vacant areas should be connected.

Accordingly, the present invention provides that recording is performed on a medium to which random access is possible as if the recording were performed on a conventional tape.

Further, according to the present invention, when recording is completed, data is recorded by storing the identifier indicating the end cluster in the cluster in which the data was finally recorded, and storing the number of clusters following the clusters in which the data was finally recorded in the head cluster in the recordable area.

Claim 16 recites a digital data recording/reproduction method for recording and reproducing digital data in units of clusters, which are the smallest unit of data recording on a disk recording medium. The method of amended claim 16 comprises, in part, constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording.

Ruff et al. discloses conventional methods of manipulating existing disk partitions by altering the contents of an IBM-compatible partition table. In particular, Ruff et al. discloses that a user may want to expand a partition to allow additional data to be stored within the partition, or a user may want to shrink a partition by allocating fewer disk sectors to the partition. Further, the user may also want to move an existing partition to a different location on the disk while substantially or exactly preserving the number of disk sectors allocated to the partition (see Column 4, lines 16-25).

Using such conventional methods to modify a partition table, Ruff et al. discloses that all necessary user and system data are copied "off the disk to a temporary storage location such as a tape or another disk" (see Column 4, lines 26-29). Accordingly, Ruff et al. discloses that when disk partition tables are modified according to the conventional methods, the existing data that is recorded on the disk is removed from the disk prior to altering the partition table.

Copying existing data that is recorded on the disk whose partition is meant to be altered clearly does not amount to constructing a file structure, when recording data

which is not yet recorded on a disk, on a disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

Ruff et al. discloses a method of manipulating disk partitions which are defined by a partition table. Ruff et al. discloses that the partition table is initially read from a disk and that the partition table may contain an RPI system indicator which indicates that an earlier attempt at partition manipulation was interrupted by a power failure (see Column 5, lines 60-66 and Column 9, lines 7-23). If the RPI indicator is present on the disk, a user is notified that the interrupted partition manipulation is being resumed, whereupon the partition is locked by the RPI to prevent other processes from accessing the partition while it is being manipulated (see Column 9, lines 36-40, and Column 10, lines 37-40 and lines 45-48). By placing the RPI in the selected partition, a host computer's operating system does not recognize the file system because of the RPI, and as a result, the operating system will not perform any processes on the partition while the partition is being manipulated. Accordingly, Ruff et al. discloses that, by essentially masking the partition through the use of the RPI, if a power failure occurs prior to the completion of the partition manipulation, the operating system of the host computer will not try to automatically fix the selected partition (see Column 11, lines 25-28).

The RPI manipulation method of Ruff et al. merely places a system indicator into a partition table which prevents external processes from accessing a partition while it is being manipulated. However, the RPI manipulation method of Ruff et al. is not disclosed, suggested or even contemplated as a method for constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

Ruff et al. also discloses a method of resizing disk partitions. The partition resizing method of Ruff et al. moves a selected partition's outer edge so as to increase or decrease the size of the partition. However, Ruff et al. specifically discloses that the partition resizing method "can be performed safely only when the partition has been changed into a recovery partition type by placement of the RPI on the disk 10" (see Column 14, lines 6-9). In other words, the partition resizing method of Ruff et al. specifically requires the RPI system indicator to be added in order to prevent the

destruction of the partition, which is markedly different from a method for constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

The partition resizing method of Ruff et al. also includes a characteristic determining step 194 which determines the size, location and system parameters of file system structures of remaining space on the modified partition in which the partition is to be enlarged to, i.e., positions on the disk which are reserved "for future growth" (see Column 19, 25-32). In the characteristic determining step 194, the number of sectors which are required for holding copies of file allocation tables, which must contain exactly enough sectors to hold all cluster entries for future growth of the partition, and the number of data clusters in the modified partition are determined (see Column 20, lines 52-65). Reserving a number of sectors on a disk for holding file allocation tables and the number of data clusters is clearly different from connecting recordable clusters in advance of starting data recording of new data which does not yet exist on a recording medium when the required area for recording the new data is unknown before starting data recording of the new data. Accordingly, the characteristic determination step 194 of Ruff et al. does not disclose, suggest or even contemplate a method for constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

The partition resizing method of Ruff et al. also includes an identifying step 198 which identifies all data areas in a selected partition that will not lie within the data cluster area of a proposed modified partition (see Column 22, lines 31-37). That is, all existing data in existing areas of a partition are identified in the identifying step 198 when such existing data will not lie within the data cluster area of a proposed modified partition. After the identifying step 198 identifies the data areas that will not lie within the data cluster area of a proposed modified partition, Ruff et al. discloses that the existing data within these areas must be cleared by being safely moved to locations that are inside the boundaries of the data cluster area of the modified partition according to known data preservation techniques (see Column 22, lines 33-37). Therefore, under the

partition resizing method of Ruff et al., if a selected partition boundary is being changed to expand or reduce the size of the selected partition, the existing data in the modified area of the partition must be moved by being relocated, and the modified area must be cleared when the size of the partition is being modified (see Column 23, line 49 to Column 24, line 4).

Further, according to the partition resizing method, Ruff et al. discloses that "[d]uring a moving step 200, the data cluster regions identified during the identifying step 198 are cleared by moving the data to a safe location on the disk 10" (see Column 24, lines 5-7). Ruff et al. discloses that several known methods of moving clusters on the partition may be used in the moving step 200. For instance, Ruff et al. discloses that clusters are identified from the region which must be moved, a free cluster is then found in which the data from the identified cluster is copied thereto, and then the file allocation table is updated to reflect the data being copied to the free cluster (see Column 24, lines 7-24).

The Examiner has relied on the above-cited portion of Ruff et al. to conclude that Ruff et al. discloses that the partition resizing method constructs a file structure in which recordable clusters are connected in advance of starting data recording. However, this portion of Ruff et al. merely discloses that when a partition is to be resized, a required area for copying existing data is cleared before the data copying is started, and the structure of the copied file is made in advance of starting the data copying.

In other words, the partition resizing method of Ruff et al. merely discloses that the number of sectors which are required for holding copies of allocation sheets of files (data) which are already recorded on a disk as well as the number of data clusters in the changed partition are determined in the characteristic determination step 194 so as to modify the size of a partition. If existing data in the partition to be modified cannot fit within the size of the modified partition or the existing data in the partition will encroach upon an area which is reserved for "future growth", the existing data is moved by being relocated, and thus, the area of the partition in which the existing data previously occupied is cleared.

However, the partition resizing method of Ruff et al. is markedly different from preventing the destruction of a file and the loss of data when an abend occurs by

constructing a file structure, when recording data which is not yet recorded on a disk, on a disk recording medium in which recordable clusters are connected in advance of starting data recording.

As described above, the present invention connects a recordable area in advance of starting data recording for an indefinite required area when recording data which is not yet recorded on a disk, and thus, a recordable area is connected in advance of starting data recording for an indefinite required area when recording such data which is not yet recorded on a disk. Therefore, by constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16, even if data recording is suspended due to an abend such as a power failure, data which would have been recorded but for the abend exists as a part of the file and thus can be reproduced.

Ruff et al., however, clearly does not disclose, suggest or even contemplate constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16. Instead, Ruff et al. merely discloses identifying existing data in an area of a selected partition whose size is to be modified, moving the existing data from the region, and updating a file allocation table containing the relationships between the moved data and the clusters.

Therefore, Ruff et al. clearly fails to disclose or suggest each and every limitation of claim 16. Accordingly, the Applicant respectfully submits that claim 16 is clearly not anticipated by Ruff et al. since Ruff et al. fails to disclose each and every limitation of claim 16.

In item 4 on page 5 of the Office Action, claim 18 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ruff et al. in view of Cizmic et al. (U.S. 4,103,338).

As demonstrated above, Ruff et al. clearly does not disclose or suggest each and every limitation of claim 16. Cizmic et al. merely discloses a disk drive in which the format information of digital data is a sync byte of a transport packet. Cizmic et al., however, does not disclose, suggest or even contemplate constructing a file structure, when recording data which is not yet recorded on a disk, on the disk recording medium in

which recordable clusters are connected in advance of starting data recording, as recited in claim 16. Accordingly, Cizmic et al. clearly does not cure the deficiencies of Ruff et al. for failing to disclose each and every limitation of claim 16.

Therefore, neither Ruff et al. nor Cizmic et al. disclose or suggest constructing a file structure, when recording data which is not yet recorded on a disk, in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

Accordingly, the Applicant respectfully submits that claim 16 is clearly allowable over Ruff et al. and Cizmic et al. since Ruff et al. and Cizmic et al., either individually or in combination, fail to disclose each and every limitation of claim 16.

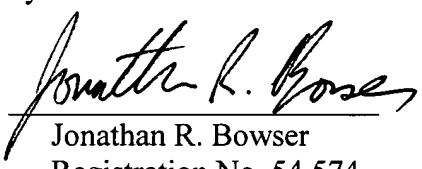
Furthermore, it is submitted that the distinctions are such that a person of ordinary skill in the art at the time the present invention was made would not have been motivated to modify Ruff et al. and Cizmic et al. in such a manner as to result in, or otherwise render obvious, the present invention as recited in claim 16. Therefore, it is respectfully submitted that claim 16, as well as claims 17-19 which depend therefrom, are clearly allowable over the prior art as applied by the Examiner.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Masayuki TAKAHASHI

By: 

Jonathan R. Bowser
Registration No. 54,574
Attorney for Applicant

JRB/ck
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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